

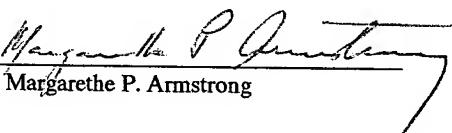
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## **CERTIFICATION**

I hereby certify that the translation of the German Patent Disclosure DE 35 37 684 A1 entitled "Lichtwellenleiterkabel-Abzweigung und Verfahren zu deren Herstellung" is a true and accurate translation.

Signed:

  
Margarethe P. Armstrong

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Optical fiber cable branch connection and process for its manufacture

For an optical fiber cable branching connection with a continuous cable and a branch cable, where one or more optical fibers of the continuous cable are connected to at least one optical fiber of the branch cable, provision is made for the separation point of the optical fibers of the continuous cable designated for the branching being selected in such a way, that enough fiber length is available for splicing.

Patent Claims

1. Optical fiber cable branch connection with a continuous cable and a branch cable, where one or more optical fibers of the continuous cable are connected with one or more optical fibers of the branch cable, characterized by the separation point of the optical fibers of the continuous cable provided for branching being selected in such a way, that sufficient optical fiber length is available for splicing.
2. Optical fiber cable branch connection according to claim 1, characterized by only those optical fibers of the continuous cable being separated, which are designated for connection with optical fibers of the branch cable.
3. Process for the manufacture of an optical fiber branch connection according to claims 1 or 2 with use of a continuous cable and a branch cable, where one or more optical fibers of the continuous cable are separated and connected with one or more optical fibers of the branch cable, characterized by the jacket of the continuous cable being opened in one area, which has sufficient length for splicing after separation of the optical fibers taken from the cable for connection.
4. Process according to claim 3, characterized by the jacket of the continuous cable being removed at the beginning of the area that was opened.
5. Process according to claim 3 or 4, characterized by the continuous cable being opened in one area by means of longitudinal slits, the cable core being exposed in that opened area, the optical fibers (6) being exposed, the optical fibers (7) designated for connection to the branch cable being cut in two, removed from the cable core and connected to the prepared optical fibers of the branch cable.
6. Process for the manufacture of an optical fiber cable branch connection according to one of the claims 3 to 5, characterized by the continuous cable and the branch cable being fastened into a sleeve (5) at the branching point.
7. Process for manufacture of an optical fiber cable branch connection according to one of the claims 3 to 6, characterized by the cores with excess length after splicing being positioned in such a way, that they can be taken our of the sleeve without difficulty, and the bending radii of the optical fibers during

positioning into the magazines (3, 4) being measured in such a way, that no attenuation increase occurs.

Description

The invention concerns an optical fiber cable branch connection with a continuous cable and a branch cable, where one or more optical fibers of the continuous cable are connected with one or more optical fibers of the branch cable, and a process for its manufacture.

In the future, optical fiber networks will be constructed for broadband communication. For the realization of such a network, branch sleeves will be necessary, as was for example published in a telcom report, volume 6, April 1983 "Telecommunication transmission with Light" and in telcom report issue 2 March/April 1984.

In the previously known case the cable - i.e. all optical fibers - is separated and spliced with connection cores or extension cores, respectively. Only the minimum of the extension cores are connected with the branch cable, the predominant number of the cores will be needed for through connection of the optical fibers. The excess length of the cores is large enough, so that the splicing can easily be done by the splicing device outside of the sleeve. The cores are relocated into the sleeve and removed for repeated re-splicing.

The invention has the objective to create an optical fiber cable branch connection of the previously described type, where the branching point can be applied at any desired point of an installed cable. It is desirable to use as little optical fiber material as possible for this and that the attenuation due to splicing as well as the number of splices and the expenditure of labor be kept to a minimum.

This objective for an optical fiber cable branch connection of the previously described type is achieved according to the invention by selecting the separation point of the optical fibers of the continuous cable designated for the branch connection in such a way that there is sufficient optical fiber length available for splicing.

Further developments of the invention are indicated in subclaim 2. In claims 3 to 7 a process for the manufacture of an optical fiber cable branch connection is indicated.

The optical fiber cable branch connection presupposes that the branch cable has sufficient length, so that sufficient reserve lengths are available from its side. However, the continuous main cable is not planned for obtaining reserve lengths of optical fiber cores, which are designated for splicing. Splicing here means the connection of two optical fibers, for example by fusing the ends in a light arc. The task of splicing is made more difficult, because initially there are no sufficient reserve lengths available.

The main idea of the invention consists in the fact, that reserve lengths can be obtained by taking them at this point from the cable installed in a straight line. This is possible, because the information flow goes through the main cable or continuous cable, respectively, in only one direction.

For this purpose the cable has to be cut corresponding to the length of the sleeve. After removal of the reserve lengths of the optical fiber cores, the cable jacket is shut again and sealed.

The sealing can be done by means of a special sleeve, a divided shrink tube or by taping with ribbon.

The advantages of the branching technology according to the invention consist in the fact, that the telecommunications flow continues over the optical fibers, which were not cut in two. Additionally, since these optical fibers were not cut in two, unnecessary and troublesome splicing was avoided. This splicing technology is especially suitable for subsequent application of branch connections at any point of the cable.

The branching technology according to the invention is further illustrated by means of diagrams. Shown are:

Fig. 1 a schematic diagram of a branch

Fig. 2 a segment from the continuous cable where the jacket has been slit

Fig. 3 the arrangement of the separation point as well as the position of the branch cable during splicing

The dashed areas on the left and right in Fig. 1 represent the edge of the cable duct. The information carried by the optical fibers enters left on the side of sleeve 5 into the cable duct. The information flows from level A over level B to level C. The branch cable 2 is guided to the continuous cable 1 and runs in a curve to point D. The continuous cable is slit to point C and at this point the optical fibers designated for branching are cut in two. In Fig. 2 it is depicted how the cable jacket is peeled back to point C in order to remove the optical fibers easily. These cores are then cleaned, the jacket is removed and then they are spliced to the correspondingly prepared cores of the branch cable. Splicing means the connection of the optical fibers by means of light arc fusion or gluing.

Fig. 3 depicts schematically the function of the excess lengths of the optical fibers from the continuous cable and the branch cable. Splicing is done between points C and D. Point C is selected in such a way, that sufficient optical fiber lengths are available for splicing. The advantage of this process for obtaining excess lengths is found in the fact, that few splicing processes are necessary. Additionally, only those optical fiber cores are cut through, which are designated to be connected to the branch cable, so that operation can continue over the other optical fibers without interruption. After splicing, the cores are deposited into a magazine 3 in the sleeve 5. The sleeve is sealed, so that no humidity can penetrate. A screwed sleeve or a sleeve sealed with a shrink tube can be used. Additionally, the sleeve provides tension relief for the cable core partially stripped of tension relief elements of the continuous cable. For this purpose, cable jackets are fastened to the base of the sleeve 5 near levels A and B. Outside tension relief elements are fastened by means of cuffs to the sleeve body.